Estradiol 17-Beta as a Predictive Factor in Premature Labor

IF THE HIGH perinatal mortality and morbidity in infants of low birth weight is to be reduced, a means of predicting and preventing premature labor must be developed. Clinical criteria have failed to predict premature labor until it is too far advanced to be of therapeutic value.

For this purpose, premature labor has been defined as a labor arising spontaneously without a clear cause three or more weeks before term. This definition, of course, excludes patients in whom premature labor is associated with uterine or congenital fetal abnormalities, multiple pregnancies, hydramnios or systemic diseases of the mother.

Plasma progesterone and estradiol 17β levels have been measured serially from the 20th week of pregnancy up to and during spontaneous labor. The most common method of measurement has been by radioimmunoassay using specific antisera. A significant fall in progesterone and rise in estradiol occurs during the five weeks preceding labor.

Studies indicate that two events are necessary to trigger the onset of labor whether premature or at term: first, a surge in estradiol concentration and second, in the presence of this concentration, a decrease in the inhibitory effect of progesterone on uterine muscle activity. In some instances, estradiol concentration rose dramatically three to ten days before the onset of premature labor. It is this rise which is of value not only in predicting premature labor, but also in its prevention by suppression of the premature estradiol surge.

Now it appears that the increased concentration of plasma estradiol is the most clinically reliable measurement for predicting premature labor rather than the decrease in progesterone or an increasing ratio between the two.

At present, the cause of the sudden increase in plasma estradiol levels and its effect on uterine activity before a premature labor is only speculative. Two theories are suggested: High concentrations of plasma estradiol may directly stimulate uterine contraction or, alternately, estradiol may incite the synthesis of prostaglandin which could promote the same contractility.

One of the handicaps in clinical use of the plasma estradiol concentration in predicting premature labor lies in the interpretation of test results. In a normal pregnancy, plasma concentration of estradiol doubles between the 20th and 36th week rising from 4.7 to 10.3 ng per ml, and then doubles again in the last few weeks of pregnancy reaching a maximum of 21.0 ng per ml at 40 weeks. The surest way to avoid misinterpretation is to depend on serial assays in suspected premature labor patients. Isolated determinations may be misleading unless all these factors are considered.

WILFRED SNODGRASS, MD

REFERENCES

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Medical Treatment of Cholelithiasis

APPROXIMATELY 16 MILLION AMERICANS have gallstones, 85 percent of which are primarily composed of cholesterol. In the past, surgical operation has offered the only definitive therapy for cholelithiasis, but the efficacy of drug therapy in dissolution of some gallstones is becoming well documented.

A necessary precursor to the formation of cholesterol gallstones is saturated bile containing insufficient bile acid and lecithin in proportion to cholesterol. A number of carefully controlled studies in recent years has established that the administration of chenodeoxycholic acid decreases cholesterol saturation of bile and dissolves gallstones. This action is exerted by replenishing the bile acid pool and by decreasing hepatic cholesterol synthesis and secretion. In two major studies, for example, more than a 50 percent decrease in gallstone size occurred in approximately half of those patients receiving chenodeoxycholic acid and, in some instances, there was complete dissolution of gallstones. This therapy is most effective for radiolucent gallstones, and is only occasionally effective in dissolving radiopaque gallstones. Side effects have been minimal, and there has been no evidence of liver damage from this therapy. Transient elevations of serum glutamic oxalacetic transaminase have been noted in some patients, but there was a return to pretreatment levels during continued therapy.

Although chenodeoxycholic acid has not yet been released for general use by the Federal Drug Administration, its value in providing safe and effective treatment for asymptomatic radiolucent